

Atty. Docket No. GRA31 P-303

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit : 1761  
Examiner : Adepeju Omolola Pearse  
Applicant : Nirmal K. Sinha et al.  
Appn. No. : 10/624,225  
Filing Date : July 22, 2003  
Confirmation No. : 6962  
For : **PROCESS FOR CONVERTING BRINED SWEET  
CHERRIES INTO SWEETENED DRIED RED TART  
CHERRY-LIKE PRODUCTS AND STABILIZED BLACK  
CHERRY-LIKE PRODUCTS**

Commissioner for Parents  
P. O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

DECLARATION OF NIRMAL K. SINHA

I, Dr. Nirmal K. Sinha, do hereby declare as follows:

1. I hold a Bachelor of Science Degree, a Masters Degree, and a Doctorate Degree in Food Science from the Department of Food Science and Human Nutrition of Michigan State University.
2. I have worked for the National Dairy Development Board of India, I have worked as a Graduate Research Assistant, and a Research Associate for Michigan State University. Since 1996, I have been employed as the Director of Research and Development or the Vice President of Research and Development for Graceland Fruit, Inc. of Frankfort, Michigan. I am a Member of the American Chemical Society, The Institute of Food Technologies, and the American Association of Cereal Chemists.
3. A true copy of my curriculum vitae is attached hereto, which lists the foregoing information, as well as further synopsis of my work experience and a listing of my publications.
4. I am one of the named inventors of U. S. Patent Application Serial No. 10/624,225.

Applicants : Nirmal K. Sinha et al.  
Appl. No. : 10/624,225  
Page : 2

5. I have read the Office Action mailed January 11, 2006, in U. S. Patent Application Serial No. 10/624,225. I have carefully studied the prior art relied upon by the Examiner in rejecting the patent application, namely, U. S. Statutory Invention Registration No. H1014 to Kraut et al.; Japanese Patent No. JP 60078536 to Hirotomo; U.S. Patent No. 4,350,711 to Kahn et al.; U.S. Patent No. 6,479,092 B1 to Wetzlaufer; and U.S. Patent No. 6,254,919 B1 to Phillips.

6. Japanese Patent No. JP 60078536 to Hirotomo discloses a process for preparing individually quick frozen (IQF) raw fruit which prevents the fruit pulp from damage.

7. Freezing cherries in water softens the firm tissue of the brined cherries. Therefore, if one wanted to prevent fruit pulp from damage, one would not freeze the fruit in water.

8. In converting brined cherries to black sweet cherry products, the addition of lemon juice, as opposed to merely a lemon flavorant, to an infusion bath changes the Brix to acidity ratio of the infused cherries so that the infused cherries more closely mimic the natural taste of black sweet cherries.

9. In my opinion, the process steps, such as leaching sulfur compounds and boiling, disclosed in U.S. Statutory Invention Registration No. H1014 to Kraut et al. would take at least five days to complete.

10. Infusion is a process by which water in a fruit is forced out of the fruit and is replaced by the soluble solids of the infusion bath. Initially, the fruit has a Brix level less than the Brix level of an infusion bath. When infusion is complete, the Brix level of the fruit will have increased and the Brix level of the liquid contained in the infusion bath will have decreased.

11. The Brix level of the liquid affects the final Brix of the infused fruit. The greater the level of Brix in the infusion bath, the greater the amount of soluble solids and the higher the final Brix of the infused fruit.

12. All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further, these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001, and that such willful false statements may jeopardize the validity of this application or any patent issued thereon.

Date

April 11, 2006

Nirmal K. Sinha



## ***Curriculum Vitae of Nirmal K. Sinha***

### **Personal**

Name : **Nirmal K. Sinha**  
 Citizenship : U.S.  
 Home address : **542 Crystal Ave., Frankfort, MI 49635**  
**Home: 231-352-4349; Office: 231-352-7181**  
**nsinha@gracelandfruit.com**

### **Academic Record**

Ph.D. Food Science Dept. of Food Science and Human Nutrition, Michigan State University, E. Lansing, Michigan  
 M.S. Food Science Dept. of Food Science and Human Nutrition, Michigan State University, E. Lansing, Michigan  
 B.S. Food Science Dept. of Food Science and Human Nutrition, Michigan State University, E. Lansing, Michigan

### **Professional Experiences**

1996- Present Director/VP, Research and Development Graceland Fruit Inc., Frankfort, Michigan  
 1994- 1995 Research Associate (Cereal Chemistry), Michigan State University  
 1990- 1993 Research Associate (Plant Biochemistry and Processing), Michigan State University  
 1987- 1990 Graduate Research Assistant, Michigan State University  
 1982- 1987 Senior Project Executive, National Dairy Dev. Board, India  
 1977- 1982 Project Executive, National Dairy Dev. Board, India

### **Synopsis of Current Activities**

I manage scientific and technical aspects of new product/process development. Activities include collaborative research with other R & D groups, development of quality and nutritional specifications, and technical supports for improving productivity and quality. My efforts have led to several new products introductions, and application of dried and processed frozen fruits and vegetables in various foods. I hold two U.S. Patents, and seven Patents are under various stages of processing. I am an associate editor and author of a Handbook of Fruits and Fruit Processing published by Blackswell Publishing, Iowa.

At Graceland Fruit I lead the development of the following:

1. Stabilized frozen fruits for use in dairy and bakery foods. These products are retort processed or pasteurized and have excellent fruit particulate integrity. The water content of fruits is stabilized which prevents hardening of fruit cells at freezer temperatures.
2. Infused-dried fruits and vegetables. These dry products retain their natural colors and flavors, taste like real fruit or vegetable, have low water activity and are excellent source of shelf stable fruit based ingredients for applications in cereal, bakery, food service, trail mixes, energy bars, etc. Preservatives or Sulfites are not used in the processes. Several of these products are organic.
3. Quality and nutritional specifications, HPLC and other analytical procedures including measurement of antioxidant capacity, and nutritional specifications for processed - frozen and dried fruits and vegetables.

### **Synopsis of Research and Teaching**

At Michigan State University, I initiated and completed several research projects. Some of these were: (i) Analysis of the national food intake data to study efficacy of food fortification on nutrients intake; (ii) An USDA funded project on soft wheat protein's structure - function relationship; (iii) A Research Excellence Fund (REF) project on a low temperature, supercritical extraction of flavors and analysis by gas chromatography-mass spectrometry; (iv) Characterization of enzyme, Polyphenol Oxidase, (v) Use of enzymes in fruit juice processing and flavor development; and (vi) Investigations into carbohydrate transformation in stored potatoes; (vii) Studies into ripening and quality aspects of cherries.

I taught undergraduate courses in Food Chemistry, Cereal Science, Fruits and Vegetable Processing and Milk Processing.

I worked on several industry-funded projects related to sensory analyses of apples and cherries, canning potential of potatoes and effects of processing on residual levels of pesticides. I prepared a manual on nutrient guide to selected minerals and vitamins for a cereal company.

### Other Industry Experience

While working for the National Dairy Board in India, I developed prototype low fat milk products, determined product mix and capacities for the milk plants. I also worked as a member of a technology transfer, training and project implementation team. In 1982, I was as a member of an EEC team for appraising and writing a national dairy project report for the Govt. of Philippines.

### Affiliations & Professional Activities

Professional member of the American Chemical Society (ACS), Institute of Food Technologists (IFT) and corporate representative for American Association of Cereal Chemists (AACC). A reviewer for the Journal of Food Science, a referred publication in area of food chemistry and processing from IFT.

### Selected Publications and Conference Proceedings

#### Thesis

Sinha Nirmal K. 1990. Influence of sprout inhibitors on ATP and PP<sub>i</sub> dependent phosphofructokinases and sugars in potatoes. Ph.D. Dissertation. Michigan State University; Major Professor (Emeritus): Dr. JN Cash

Sinha Nirmal K. 1977. Effects of certain proteins on lipid oxidation. M.S. Thesis. Michigan State University; Major Professor (Emeritus): Dr. LR Dugan, Jr.

#### Book Chapter and Special Reports

N. Sinha et al. 2006. Handbook of Fruits and Fruit Processing. Blackswell Publishing, IA, USA.

J. N. Cash and N. Sinha. 1997. Canning of Vegetables. Ch 2, Pages 49-64. In "Processing of Fruits and Vegetables: Science and Technology", Technomic Publishing, Inc.

N.K. Sinha, M. Siddiq, J.N. Cash and S.H. Cash. 1996. Nutrient Guide to Selected Minerals & Vitamins. A manual for a Cereal Company.

#### Patents

1. N.K. Sinha et al. 2000. U.S. Patent No. 6,132,794: Infusion drying of Carrots.
2. N.K. Sinha 2003. U.S. Patent No. 6,524,640: High Solids Containing Processed and Shelf-Stable Vegetables.

#### Referred Publications

1. N.K. Sinha. 1998. Infused-dried and Processed Frozen Fruits as Food Ingredients. Cereal Foods World. 44:9, 699-703
2. N.K. Sinha, Hiroshi Yamamoto and P.K.W. Ng. 1997. Effects of flour chlorination on wheat storage proteins by differential scanning calorimetry and reversed phase liquid chromatography. J. Food Chemistry. 59:3, 387-393.
3. Siddiq, M, Sinha, N.K., Cash, J.N. and Hanum, T. 1996. Partial Purification of Polyphenol Oxidase from plums. J. Food Biochemistry. 20:2, 111-123.

4. D.E. Guyer and N.K. Sinha. 1995. Supercritical Carbon Dioxide Extraction of Onion Flavors - Relationship of Onion Pyruvate Content on Flavor Yield. *J. Sci. of Food Agric.* 69, 457-460.
5. T. Hanum, N.K. Sinha and J.N. Cash. 1995. Characteristics of Gamma glutamyl Transpeptidase and Allinase of onions. *J. Food Biochem.* 19, 51-65
6. T. Hanum, N.K. Sinha, D.E. Guyer and J.N. Cash. 1995. Pyruvate and Flavor Development in macerated Onions by Gamma-glutamyl transpeptidase and exogenous GS Lyase. *Food Chemistry.* 54, 183-184.
7. Wen-min Wang, M. Siddiq, N.K. Sinha and J.N. Cash. 1995. Effect of Processing Conditions on Physicochemical & Sensory characteristics of Stanley plum paste. *J. of Food Processing & Preservation.* 19, 65-81.
8. T-S Chang, M. Siddiq, N.K. Sinha and J.N. Cash. 1995. Commercial Pectinases and the Yield and Quality of Stanley plum juice. *J. of Food Processing & Preservation.* 19, 89-101
9. Wen-min Wang, M. Siddiq, N.K. Sinha and J.N. Cash. 1995. Effect of Storage Conditions on the Chemical, Physical & Sensory Characteristics of Stanley plum paste. *J. Food Quality.* 18, 1-18.

#### Conference Proceedings

1. N. Sinha and W.O. Song . 1996. Consumption of Ready-to-eat cereals and its effect on selected nutrients and food group intake. 21st National Nutrient Databank Conference.
2. V. Chonhenchob, J.N. Cash and N.K. Sinha. 1996. Investigation on the nonenzymatic browning in potato chips based on model systems utilizing selected amino acid and sugars. Institute of Food Technologists 57th Annual Meeting.
3. N. Sinha, G.Hou and P.K.W. Ng. 1996. Hydrophobicity of wheat flour proteins measured by fluorescence spectroscopy. AACC 81st annual meeting.
4. G. Hou, N. Sinha and P.Ng. 1996. Evaluation of wheat flour proteins by electrophoresis, fluorescence spectroscopy and RP-HPLC in relation to baking quality. AACC 81st annual meeting.
5. N. Sinha, P.K.W. Ng and H. Yamamoto. 1995. Effect of flour chlorination on wheat storage proteins by DSC and RP-HPLC. AACC 80th annual meeting. Cereal Food World (Sept., 1995) p.683
6. T. Hanum, N.K. Sinha and J.N. Cash 1995. Role of gamma -glutamyl transpeptidase on flavor enhancement in onion. Institute of Food Technologists 56th Annual Meeting.